

GANPAT UNIVERSITY
M. Tech. (Electrical Engineering) Semester – II
Regular Examination July - 2013
3EE204 Electrical Drives

Time: 3 Hours / As per Scheme

Total Marks: 70

- Instruction:**
1. Attempt all questions.
 2. Assume suitable data if necessary.
 3. Give neat diagram and waveforms wherever required.

Section - I			
Que. – 1	a.	Discuss operation of IM under unbalanced voltage and unbalanced rotor impedances.	6
	b.	Explain Chopper controlled DC drive. Discuss its dynamic behaviour.	6
OR			
Que. – 1	a.	Derive dynamic equivalent circuit of IM in stationary and synchronous reference frame.	6
	b.	Explain controlled rectifier fed DC drive. Discuss its closed loop control.	6
Que. – 2	a.	Discuss induction motor characteristics in constant torque and field weakening region.	11
	b.	Discuss operation of V/f controlled IM drive in constant power and constant torque region.	
OR			
Que. – 2	a.	Discuss torque-speed curve of induction motor at variable voltage and variable frequency.	11
	b.	Explain static Scherbius drive. Compare it with conventional Scherbius drive.	
Que. – 3	a.	Discuss indirect vector controlled IM drive. How decoupled effect is obtained?	6
	b.	Analyze behaviour of DC drive under dynamic operation.	6
Section – II			
Que. – 4	a.	Discuss four quadrant operations of electric drives.	12
	b.	Explain trapezoidal SPM machine drive with PWM voltage and current control mode.	
OR			
Que. – 4	a.	Explain role of various types of converter circuits in electric drive.	12
	b.	Distinguish sinusoidal PM machine drive with trapezoidal PM machine drive.	
Que. – 5	a.	Discuss stability consideration of electric drives.	11
	b.	Explain vector control of wound field synchronous machine.	
OR			
Que. – 5	a.	Discuss working principle of synchronous reluctance machine drives.	11
	b.	Discuss application of synchronous machine drive and their power ratings.	
Que. – 6	a.	Explain synchronous reference frame equivalent circuit of SRM. Derive torque equation.	6
	b.	Explain control of load commutated inverter drive with constant γ angle.	6